

9. (Cancelled).

10. (Cancelled).

11. (Cancelled).

12. (Cancelled).

13. A filter arrangement as claimed in claim 1, characterized in that the bandpass filter and the notch filter are thin-film filters.

14. The method of claim 8, wherein said carrier layer consist of a ceramic material, a ceramic material with a planarizing layer of glass, a glass-ceramic material, silicon, GaAs or sapphire.

15. (Cancelled).

16. (Cancelled).

REMARKS

This is responsive to the Office Action dated September 20, 2002 in which the Examiner rejects all the pending claims either as being anticipated by Ella (U.S. Patent No. 5,910,756) under 35 U.S.C. §102(b) or as being obvious over Ella patents (U.S. Patent Nos. 5,910,756 and 5,714,917) under 35 U.S.C. §103(a). Claims 15 and 16 are further rejected as being indefinite under 35 U.S.C.

Independent claims 1 and 8 have been further amended to more clearly define the present invention. These claims are now believed distinguishable from the cited patents. Applicants respectfully traverse the rejections of the Examiner based on the amendment and the following detailed explanation.

The novel filter arrangement of the present invention comprises a substrate on which two filters - a bandpass filter and a notch filter - are mounted and coupled to one another. In particular, as defined in amended claim 1, the notch filter is used exclusively for the purpose of producing a

notch at one or both edges of the passband generated by the bandpass filter. Thus, the design of the filter arrangement is significantly simplified since the notch filter can be designed independently without interference with the design of the bandpass filter.

Applicants do not believe that the above emphasized distinguishing feature of the present invention, as expressly defined in claim 1, is anticipated by Ella. Ella teaches a BAWR-SCR filter arrangement in which SCR and BAW ladder filters are combined in a filter circuit so as to take advantage of both types of filters. In particular, BAW ladder filters can exhibit passbands having deep notches, and SCR filters have better stopband attenuation (see, e.g., col. 5, lines 45-53).

However, unlike the present invention which utilizes a notch filter exclusively for generating the notches, the BAW ladder filters in Ella, which generate the notches above and below the passband, also function as a bandpass filter for generating a frequency response at the required center frequency. More specifically, the parallel resonance yielded by the series-connected BAW resonator and the series resonance yielded by the shunt-connected BAW resonator generate the notches at the upper and lower edges of the passband respectively, while the series resonance of the series-connected BAW resonator and the parallel resonance of the parallel-connected BAW resonator generate the frequency responses at the center frequency of the circuit (see Figure 10 and col. 23, lines 1 - 14). This is clearly described throughout Ella, and a detailed introduction to the BAW ladder filters can be found in the Detailed Description (see col. 1, lines 59 - col. 2, lines 47).

Therefore, applicants do not believe that claim 1, in which the notch filter is exclusively for producing a notch at one or both edges of the passband, has been anticipated by Ella (US Patent No. 5,910,756) under 35USC §102(b), and is thus patentable. At least for the same reason, its dependent claims 2 and 4-7 and 13, each of which includes all the limitations in claim 1, are also patentable.

Applicants do not believe that the method of manufacturing the filter arrangement of the present invention as defined in the amended claim 8 has been anticipated by Ella, either. As taught by

the present invention, at first the second electrode, the piezoelectric and the first diode are subsequently provided on a carrier layer to form a resonator unit and a notch filter (which comprises an inductance and a capacitor), then a reflection element is deposited on the resonator only, then a substrate is fastened on the entire assembly, and finally the carrier layer is removed. By this inventive technique, which comprises steps in reverse of those in the conventional method in the art, with the help of the carrier layer, the substrate is the final component to join the assembly.

Thus the reflection element does not need to be deposited on the whole first electrode but only on the region of the resonator unit. In Ella, however, the sacrificial layer is used for the purpose of forming an air gap between the substrate and the membrane (see col. 12, lines 31 - 34). Due to its specific role, the sacrificial layer stands between the substrate and the membrane, while in the present invention the carrier layer are positioned opposite to the substrate. To make claim 8 more clearly distinguishable from Ella, applicants further define claim 8 that "a substrate (1) is fastened on the entire assembly opposite to the carrier layer". Thus, applicants believe claim 8 as amended is not anticipated by Ella and is thus patentable. At least for the same reason, its dependent claim 14 is also patentable.

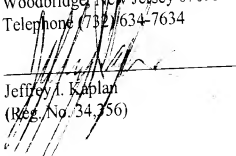
Applicants have also reviewed the other cited Ella patent (U.S. Patent No. 5,714,917) and believe the above discussed distinguishable features in the amended claims 1 and 8 cannot be found anywhere in the Ella '917 patent either.

Applicants therefore respectfully request reconsideration and allowance in view of the above remarks and amendments. The Examiner is authorized to deduct additional fees believed due from our Deposit Account No. 11-0223.

Respectfully submitted.

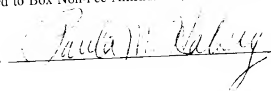
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Dated: December 20, 2002


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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal service as first class mail, in a postage prepaid envelope, addressed to Box Non-Fee Amendment, Commissioner for Patents, Washington, D.C. 20231 on December 20, 2002.

Dated December 20, 2002 Signed  Print Name Paula M. Halsey

MARKED-UP VERSION OF THE AMENDED CLAIMS 1 AND 8

1. (Thrice Amended) A filter arrangement which comprises a substrate (1) on which are provided a bandpass filter for generating a passband and a notch filter ~~exclusively~~ for producing a notch at one or both edges of said passband, which filters are coupled to one another [and functionally independent to one another].

8. (Thrice Amended) A method of manufacturing a filter arrangement, which comprises a substrate and provided thereon a bandpass filter of bulk acoustic wave resonators and a notch filter, by which method

- a second electrode (5), a piezoelectric layer (4), and a first electrode (3) are provided on a carrier layer and are structured such that at least one resonator unit, a capacitor, and an inductance are created,
- a reflection element (2) is deposited on those portions of the first electrode (3) which belong to the resonator unit,
- a substrate (1) is fastened on the entire assembly ~~opposite to the carrier layer~~, and the carrier layer is removed.